FORMAL PLANNING SYSTEMS-

THE STATE OF THE ART

Peter Lorange[1]

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Paper presented at the Sixth Annual Meeting of the American Institute for Decision Sciences, Atlanta, October 30- November 2, 1974

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Acknowledgement: I am thankful to Steven Alter, Sudeep Anand, Michael Ginzberg, Peter Keen and Richard F. Vancil for comments on an earlier version of this paper.

This paper attempts to survey the literature on long-range formal planning processes for corporations. The scope of this paper is thus limited in several ways: We shall be dealing solely with the planning process as it goes on in corporations which are out to survive through profit-making behavior. Thus, planning in organizations such as those in the public sector will not be discussed. Further, we shall limit ourselves to formalized planning processes. Given that a formalized system for planning only becomes necessary (and desirable) in instances where the company has grown too diverse, big, or interrelated to handle planning informally, we shall typically be dealing with large organizations. Also since most large, diverse, and interrelated corporations happen to be in the manufacturing sector, we mainly shall confine ourselves to planning in manufacturing corporations. Thus, we shall survey the literature for the state of the art of formal long-range planning within large-to-medium-sized manufacturing corporations.

There is, as of today, a considerable body of literature that might be labelled "planning literature", despite the fact that the field of planning still is less clearly "positioned" than are the disciplines we often consider as more mature, such as economics. In addition to the planning literature, however, there is also a vast amount of literature relevant to planning from related areas, such as policy theory, organization theory, systems theory and cybernetics, management control theory, management information systems theory and computer modeling. We shall, in general, not

review the literature in these fields, although it may be potentially relevant. However, given the difficulty of drawing sharp lines as to where the one body of literature ends and the other begins it becomes inevitable that we shall now and then classify as planning certain activities which others might consider as belonging to other areas.

Having gone through a considerable body of literature for the purpose of this survey study, several preliminary observations can be made: It is apparent that a vast number of impressive works have been done in the field, both conceptual as well as empirical. Also, the research activity over the recent years seems to be as high as ever. Nevertheless, I am left with the uncomfortable feeling that somehow it is difficult to fit the bits and pieces together. There seems to be considerable lack of consensus in the literature when it comes to such central issues as the nature of planning systems, what constitutes relevant empirical areas of research, etc. Also, the common vocabulary seems to be surprisingly small and too often lacks adequate definitions. The research design frequently seems to be sloppy, particularly in neglecting to state assumptions which limit the universality of the sample. Thus, at the risk of assuming that the problem of systematizing the literature is not due merely to my own lack of interpretative ability, I shall indicate a set of reasons why this situation may exist.

First, let us consider the nature of our general problem. We are studying a very complex administrative phenomenon, consisting of both a number of different processes (corporate planning, business planning,

functional planning), and a number of different substantive elements (corporate strategy, business strategy, and functional strategies), as well as involving a number of organizational levels (corporate, divisional, functional). Further, the various aspects of the phenomenon under study seem to be highly inter-related. Finally, due to the vast differences in corporate situational settings and the need to tailor strategies and planning systems to each given setting, we have little hope of arriving at more general strategy and systems concepts at the end of our research. This lack of potentials for drawing general conclusions in our research is probably the most important reason for our research task being more difficult than it would be in many other areas of business research.[1] Thus, it may be unfair or unrealistic to expect a more orderly pattern of research outputs in this field. However, it may also be that some of the research fails to recognize the complexity of the underlying setting. A study which starts out from unrealistically narrow premises may not easily be reconcilable with studies based on more reasonable premises.

Second, the nature of research on planning systems differs nothing from requirements to research in other areas of management or social sciences in that good research requires a certain balance between theory, observation and practice.[2] Argyris has attacked the methodology of the social sciences for imbalance in the relationship among observation, theory and practice and asserts that this may lead

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[1] However, the main drift in all behaviorally related management theory is similar, namely founded on the contingency proposition.

[2] The ideas in this paragraph are based on Christenson, Charles, "The Contingency Theory of Organization: A Methodological Analysis," Harvard Business School Working Paper, 36, Boston, 1973.

to supporting the status quo.[1] Particularly, he is concerned about the fact that there seems to be too little new theorizing, and, as a consequence, empirical studies tend to verify existing theories. The important message is that there should be a certain balance between theorizing and empiricism. Empiricism without a theory is "naive" empiricism. Of course, imbalance the other way, namely theorizing without empiricism may be equally limiting. One of the purposes of this survey paper is to determine the extent to which there is a balance between theory and empiricism in this field. Our fear, however, is that this balance requirement for good research has been to a large extent neglected. Therefore, an hypothesis for this study is that much of the planning literature is of relatively limited value due to the above imbalance phenomenon.[2]

Third, and last, the area of planning is a relatively new field. This is evidenced in several ways. For instance, the data for empirical research may often not be readily available. Most of the progress in the art of designing long-range planning systems has been spearheaded by business organizations themselves. Understandably, there will often be reluctance to give out data about the very latest systems developments for proprietory reasons. The three general problems just discussed will need to be recognized and accounted for in the continued research of this field in order to allow for more meaningful scientific discovery. Perhaps it is too much to expect more unified approaches to research and more common vocabularies to emerge at this stage.

Let us now turn to a review of the field, in terms of theories and observations. This will better allow us to determine to what

1. Argyris, Chris, The Applicability of Organizational Sociology, Cambridge University Press, Cambridge, 1972.

2. Merton's advocacy for "theories of the middle range" is consistent with our hypothesis. See Merton, R.K. Social Theory and Social Structure, The Free Press Glencoe, 1957.

extent the complex research problem itself or simplified surrogate problems have been addressed, and to what extent a balance (or lack of balance) exists between theory and observation. We shall first discuss theoretical approaches to the planning process, keeping in mind that a review of the empirical evidence will follow. This, in turn, should allow us to give a synthesis of the "health" of the state-of-the-art, and to suggest a number of areas for further research.

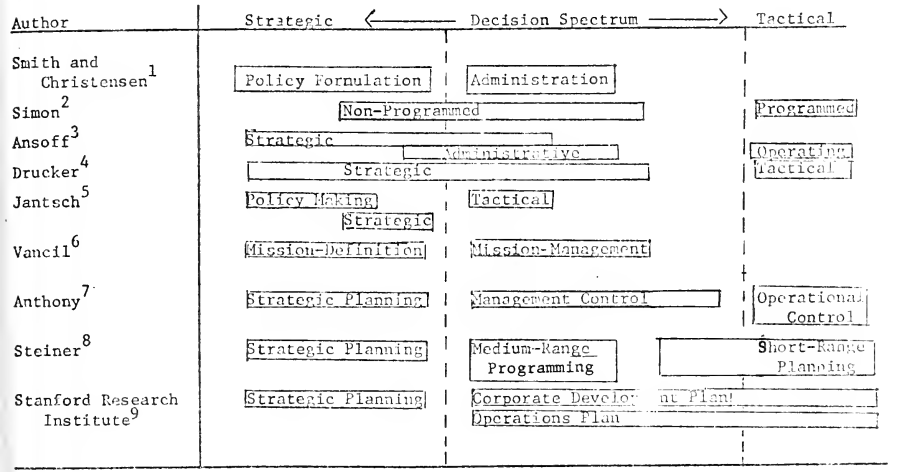
'11. Classification of Theories for Planning

We shall classify the planning theories into structural models, process models, and combination models (these being "hybrids" of the former two). Structural models will focus on what the planning activities are and how these activities interrelate. Normative structure models which address what the activities should be and how they should interrelate will also be discussed. Process models will deal with how the planning activities, or certain aspects of them, proceed in actual practice. Normative process models are also possible. Hybrid models will essentially address both structure and process, and how these interrelate. These models will thus illustrate planning systems in a more complete sense (given that a system is both a structure and a process).

A. Structural Models

A number of authors have developed conceptual models for long-range planning systems. While the specific suggestions differ as to what the components of such a system should be, there seems to be general agreement that the structure of the planning task is falling along a continuous spectrum from strategic focus to tactical focus. Table 1 attempts at a

Table 1. Summary of Planning Structures



[1]Smith, G. A. and Christensen, C. R., Policy Formulation and Administration, Irwing, Homewood, 1962.

[2]Simon, Administrative Behavior, MacMillan, New York, 1947.

[3]Ansoff, H. I., Corporate Strategy, McGraw Hill, New York, 1965.

[4]Drucker, P. F., The Practice of Management, Harper Row, New York, 1954.

[5]Jantsch, E., "Technological Forecasting in Corporate Planning," Long Range Planning, September 1968.

[6]Vancil, R. F., "Management Control Systems: The Concept of Management Control," Unpublished Working Paper, Harvard Business School, Boston, 1967.

[7]Anthony, R.N., Planning and Control Systems: A Framework for Analysis, Division of Research, Harvard Business School, 1965.

[8]Steiner, George A., Top Management Planning, MacMillan, 1969.

[9]Stanford Research Institute, op. cit.

brief summarization of some of the more well known structural models in terms of what the structural elements are called and how these are positioned along a strategic/tactical decision spectrum. The table suggests that there seems to be considerable similarity among planning structure models. Therefore, in order to avoid unnecessary repetition we shall discuss only a representative sample of these models.

A conceptual scheme that has become widely known is that of Steiner.[1] He classifies planning into strategic planning, medium range programming, and short term budgets. Strategic planning deals with the determination of broad policies and strategies to reach these objectives. Medium range programming developes coordinated, comprehensive plans for major organizational functions, within the guidelines of policies and strategies defined at the earlier stage. The key issue of this stage is the coordination of the overall activities of different organizational entities. The third stage consists of the development of short-term budgets and detailed functional plans. In it the detail is expanded, and guidelines for the daily operation is the output. Steiner also stresses the need to establish an appropriate organizational structure in order to carry out the planning actions, and recognizes the nature of the planning process to be continuous and iterative. Further, his model is one of the few that explicitly takes into account the effect of management values and basic societal purpose.

As we move from strategic to tactical planning in Steiner's scheme

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[1] Steiner, George A., op. cit.

there are a number of differences along a set of dimensions, dimensions which are not being absolute but of degree. Table 2 illustrates this:

Table 2. Some Distinctions Between Strategic and Tactical Planning

Characteristic	Strategic	Tactical
Viewpoint	Corporate	Financial
Org. units involved	Few top mgrs., staff	Several mid/lower mgrs.
Regularity	Continuous, irregular. Triggered by needs and opportunities.	Periodic. On a fixed cycle.
Problem type	Unstructured, one of a kind	Structured, repetitive.
Time horizon	Very long to short	Short
Uncertainty	High	Low
Range of alternatives	Large	Constrained from above
Scope	Entire organization	Org. units responsible for specific plans
Detail	Limited	Extensive

A strongly related scheme, which has received much notice, is that of Anthony.[1] He too classifies long-range planning into three parts, strategic planning, management control and operational control. He states that strategic planning consists of "deciding on the objectives of the organization, on changes in these objectives, on the resources used to attain these objectives, and on the policies that are to govern the acquisition,

[1] Anthony, Robert N., op. cit.

use, and disposition of these resources."[1] This seems to be roughly equivalent to Steiner's concept of Strategic Planning. For Anthony management control is "the process by which management assure that resources are obtained and used effectively in the accomplishment of the organization's objectives."[2] This concept seems to cover Steiner's medium range programming concept as well as some of his short range planning. Finally Anthony considers operational control as "the process of assuring that specific tasks are carried out effectively and efficiently."[3] This seems to go beyond Steiner's short range planning concept in that it deals explicitly with questions of controlling daily activities. Anthony also discusses how a number of dimensions vary in degree along a continuum when we move from strategic planning, through management control to operational control. His dimensions are, in general, quite similar to those of Steiner.

Ackoff distinguishes between strategic and tactical decisions, yet these differences remain more a matter of degree than kind.[4] Strategic decisions tend to be longer range, having more enduring effects and being more difficult to reverse. These decisions tend to be broad and to encompass several organizational functions. Strategic decisions

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[1] Anthony, op. cit., p. 16

[2] Anthony, op. cit., p. 17

[3] Anthony, op. cit., p. 18

[4] Ackoff, Russel, A Concept of Corporate Planning, Wiley, 1970

are concerned with both ends, i.e. goals as well as broad means of attainment, while tactical planning, on the other hand, focusses on narrower questions of means only. Plans are interim outputs from the continuous planning process and should consist of five items: a) ends--these being the goals and objectives, b) means--such as policies, programs, procedures, and practices, c) resources--what is required to pursue goals by means, d) implementation--procedures to organize and coordinate programs, etc., and e) control--means for tracking program progress vs. goals and for correcting errors.

Stanford Research Institute[1] has developed a model that consists of the strategic plan, the corporate development plan and the operations plan. The strategic plan sets the overall mission, strategy and goals. This seems to correspond to most of Anthony/Steiner's strategic planning. However, the detailed policy and procedure formulation falls into the corporate development plan, which develops policies for corporate and divisional restructuring. The operations plan deals with policies and procedures for specific projects, i.e. how these are to be handled with respect to each function.

In conclusion there seems to be agreement that long-range planning does not consist of one but several distinctive elements. There will be different planning subsystems dealing with distinctively different planning activities, ranging from strategic to tactical. On the other hand, there seem to be several different ways of defining these elements. Thus,

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[1] Stewart, R. F. and M. O. Doscher, The Corporate Development Plan, Stanford Research Institute, Report No. 183, Menlo Park, 1963.

when discussing long-range planning systems, we should be precise about the fact that we are in fact dealing with a set of distinctively different planning subsystems, and we should indicate in what manner we have chosen to define the structural elements. A theory for long-range planning should therefore be required to be precise about the planning structure that is implied.

B. Process Models

Process models of planning will focus on aspects of decision-making as part of planning, i.e. on how planning is being done. We shall classify these models into three categories, as Allison[1] did for models of foreign policy decision-making processes. The rational actor model shall describe the planning process as one of maximization behavior and rational choice. The organizational process model shall describe planning as taking place within an organization with subunits. Decision-makers will act (and interact) according to various behavioral rules which do not necessarily coincide with choice behavior, including pursuing subgoals which may be detrimental to overall organizational goal achievement. The third model will be based on a bureaucratic political mode of behavior, with "players" exercising power and bargaining to achieve their interests.

Model 1: The Rational Actor

The decision model of the rational decision-maker assumes the following basic concepts:

a) The decision-maker is able to specify a set of goals and objectives which can be the basis for determining the degree of goal-fullfillment or "utility" associated with a set of consequences.

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[1]Allison, Graham, Essense of Decision, Little Brown, Boston, 1971.

b) The decision-maker must choose between a number of alternatives.

c) For each alternative there will be a consequence if that alternative is chosen.

d) The rational decision-maker makes the choice of the best alternative, i.e. the one which should yield the highest degree of goal fullfillment. Thus, "rationality refers to the ability to make consistent, value-maximizing choice within specified constraints, i.e. within the context of a given payoff function, fixed alternatives, and consequences that are known."[1]

One example of a model 1 approach to planning is found in the so-called systems analysis literature. For instance Quade[2] has discussed systems analysis as a tool to be used in the planning process. Elements of systems analysis are:

a) specification of objectives and ways to measure these
b) specification of alternatives...policies, strategies or actions
c) identification of costs or resources used for each alternative
d) selection of a model relating alternatives, costs and attainment of objectives
e) specification of a criterion by which to rank alternatives, and choice of the best alternative.

Quade also advocates sensitivity analysis. Since the model frequently contains great uncertainty and since the criteria may often be multi-dimensional, it may be necessary to iterate through the evaluation process a few times to get a better view of the worth of competing alternatives. The iterative rational choice model may look like this:[3]

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[1] Allison, G., op. cit., pp. 30-31.

[2] Quade, E. S., "Systems Analysis Techniques for Planning-Programming-Budgeting," The RAND Corporation, P-3322, Santa Monica, 1966.

[3] See Quade, op. cit.

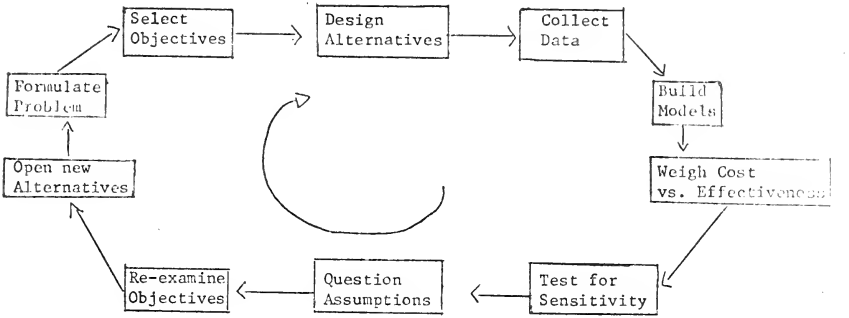

Figure 1. Rational choice planning process

Von Wright sees planning as a problem of choice and takes a strictly rational view on how the organization functions.[1] He characterizes the planning process as a dynamic programming decision problem and applies principles from decision analysis to choose the optimal strategy.

Many more examples can be found in the planning literature as well as in the planning manuals of numerous corporations that see planning as a process of rational choice, a choice which involves "the explicit evaluation of alternative courses of action, selection of one of the alternatives for execution, and formal communication of the decision to interested persons throughout the organization...".[2] In conclusion, if we believe that the planning process can be described by means of the rational actor model, we need to design a planning system in such a way that all the steps of rational choice will be carried out. The planning system becomes a vehicle to strive for a rational long-term course of action.

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[1] von Wright, G. H., A Deontic of Action, Acta Philosophica Fennica, 1968, p. 57.

[2] Emery, J. C., Organizational Planning and Control Systems, MacMillan, New York, 1969, p. 108.

Model 11. Organizational Processes

An organization may be considered as a coallition of participants, with diverse goals, interests, etc. Bargaining among the interest groups lead to the establishment of organizational goals and objectives. Decision-making in this context differs from the rational model. For instance, Simon has identified five major deviations from the rational problem-solving model which seem to be typical for real-life problem solving:[1]

a) Problems are split up into smaller and more understandable subproblems. Ideally, these subproblems may be assigned to organizational subunits for them to handle. For instance, the problem of corporate planning may be factored into business planning problems to be handled by each division.

b) Instead of insisting on settling on the optimal solution, one will be willing to accept a solution which is satisfactory, labelled "satisficing" by Simon.

c) Instead of searching extensively for all alternatives, limited search by means of stable rules of thumb seem to dominate.

d) Uncertainty is avoided to the largest possible extent. Pressing problems rather than long-term strategic ones are being solved. Attempts are made to negotiate with the environment.

e) Action programs are developed for the more common decision types, and these repertories are followed by the corporations.

Cyert and March add the following concepts to the organizational decision-making model, in addition to Simon:[2]

f) Conflicts are likely to exist between organizational units, and these are resolved only in part and sequentially, and only when problems become accute--"quasi-resolution" of conflict.

g) Organizational search is stimulated by specific problems which one attempts to solve.

h) Organizations "learn" from experience, leading goals, rules, search procedures to evolve.

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[1] Simon, Herbert, Models of Man, MacMillan, New York, 1957.

[2] Cyert, Richard F. and James G. March, A Behavioral Theory of the Firm, Prentice-Hall, Englewood Cliffs, 1963.

A number of studies have been made, documenting the fact that this process-oriented view of decision-making seems to resemble closely how real life firms actually operate. Although long-range planning may seem to be a rational approach to decision-making (i.e. a model 1 type process), Allison gives what we would consider analogous examples from government of how planning tends to become part of the organization process (i.e. model II type):

> "The existence of long-range planning units...would seem to support Model 1's implication that governments deal with the uncertain future by devising long-range plans. Model 11's proposition, however, concerns the effective contribution of such units to the policy output. Long-range planning tends to become institutionalized (in order to provide a proper gesture in that direction) and then disregarded".[1]

Katz and Kahn consider the activities of planning to be twofold, namely to gather intelligence about environmental changes and to develop courses of action (alternatives) to meet anticipated changes in the environment.[2] They point out that a number of factors will influence the process of organizational decision making including planning. Their focus is on the "organizational" and personal factors which affect the policy making process. The organizational factors include the nature of the problems, i.e. what types of solutions it suggests, the time pressure for solution, recognition of when the problem arises in the organization and how this preselects the alternatives to be considered. The personal factors deal with expectations, both in terms of social positions and reference groups, attitudes and values, "style" of thinking (dichotomous or fixed solution types), the mental model available to deal with a problem, and the cognitive capacity.

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[1] Allison, Graham, op. cit., pg. 92

[2] Katz, D., and Kahn, R. L., The Social Psychology of Organization, Wiley, New York, 1966.

Cohen and Cyert have developed a nine-step procedure for the strategic planning process in which they incorporate behavioral decision-making elements developed by Simon, and Cyert and March,[1] but also incorporate elements of the rational actor model. These nine steps are as follows: formulation of goals; analysis of the environment, assigning quantitative values to the goals, strategy formulation by strategic subunits; "gap analysis"; strategic search; selecting the portfolio of stratefic alternatives; implementation of the strategic program; and measurement, feedback and control. The three first steps consist of the "macroprocess" of operational goal formulation at the corporate level, and step four is the "microprocess" of goal formulation by divisions, departments, etc. The difference between the corporate and the aggregation of subunit goals will then be the planning gap which can be filled by a rational selection of strategic program after an opportunity search procedure.

In conclusion, if we believe that the organization process model gives a reasonable description of the planning process the design of the planning system will be different from if we consider the rational actor model. The tendency towards limitted search, bounded rationality and suboptimization should be acknowledged as normal for long-range planning. By explicitly accepting that this type of organization process is relevant, we will be in a position to influence or impose changes on parts of the process so that the quality of planning may improve. In this way we may be able to make modifications in the process so that also rational choice elements can be incorporated.

[1]Cohen, K.J., and Cyert, R.M., "Strategy: Formulation, Implementation, and Monitoring," Journal of Business, July 1973.

The decision-making process may be seen as the resultant of "bargaining" among a number of participants according to certain rules of the game. In this sense, decisions are recognized as resultants of power plays among opposing units bargaining for their own best interes. The units in the organization are thus players in various positions, which, depending on their own goals and interests have a certain stake in and stand on a given issue that is up for decision. The power of each player is of major importance, but this is, of course, limited by the respective rules of the game.

Lindbloom[1] offers a "muddling through" theory as an alternative to rational decision-making which can be contrasted with rational theory along a number of points:

a) Instead of specifying objectives and ways to measure them, objectives are multi-dimensional. Trade-offs are difficult to specify, measures are messy at best and objectives cannot always be agreed upon.

b) Instead of specifying alternatives, cognitive capacity limits our ability to consider all alternatives; some are likely to be missed. This is related with Simon's notion that we generate alternatives one at a time until one is accepted.

c) Instead of identifying costs, cognitive limitations come into effect, in that possible outcomes are neglected, and that cost may include trade-offs in values which are neither understood nor agreed upon.

d) Instead of selecting a model(s), there is limitted understanding of the interactions of the variables. There is a lack of theory to specify an overall model, and instead an emphasis on comparing incremental change from current situation.

e) Instead of specifying a criterion which is the basis for our optimization effort, we deal with multidimensional criterion with no real means to trade off between dimensions. Values and policies are not separable in that there may be agreement on objectives and ranking of objectives.

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[1] Lindbloom, C. E., "The Science of Muddling Through," Public Administration Review, Spring 1959.

Bower [1] has developed a political model for strategic investment planning from the point of view of the chief executive and top management within large organizations. Based on case-study experiences he claims that the process of how large organizations go about allocating their resources is heavily influenced by "political" forces, and that this political process of capital investments is working largely in a "botton-up" manner. The chief executive's major mechanism of controlling this process will be to change the organization structure so that the process receives better exposure.

In conclusion, if we believe in the relevance of the bureaucratic politics model, the implication seems to be that long-range planning in the systematic sense cannot effectively work. A way of diminishing the bureaucratic influences will be through changes in the organization structure. This might bolster a viable planning activity.

Let us attempt to compare the three process model approaches by means of concepts borrowed from systems theory. We may distinguish an open system from a closed system in that the former has an environment while the latter has not. For instance, a corporation will be an open system within the closed system of the world's economy. More specifically, a corporation will be a set of open systems, such as divisions, departments, etc. This set comprises the subsystems of the firm. An (open) subsystem of the firm will thus have two "environments", the inner environment which is made up of the other subsystems of the firm, and the outer environment which is consists of other systems such as other firms, etc. A system interacts with other systems in the inner as well as the outer environment through an interface. The rational actor model implies an

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[1] Bower, Joseph L., Managing the Resource Allocation Process, Division of Research, Harvard Business School, Boston, 1970.

equilibrium between the various subsystems of the firm and the outer environment, in the sense that the objectives of all the subsystems in the inner environment are consistent and that the inner environment is interacting with the outer environment is such a way that the objectives of the inner environment are being maximized. The rational actor model deals only slightly with how this state of equilibrium might be achieved. In contrast, the organizational model provides rules for how the subsystems interact. between each other in the inner environment as well as with the outer environment. This model can thus be seen as a supplement to the rational actor model in that it does not deal with the interaction between systems as a "black box" but specifies organizational interface patterns. Finally the two models can be contrasted to the political or bureaucratic model. This can seen as emphasizing how persons within subsystems will be in position of power as a result of the positioning of a subsystem vis-a-vis other subsystems within the inner environment and vis-a-vis the outer environment. Thus, this model is a further modification of the previous two in that it accounts for decision-makers' power plays within the decision-making process. The political model is distinctively different from the organization process model in that it deals with the development of power positions while the other specifies the rules along which the "power exchange" may take place. It can be seen that the focus of attention changes from the overall corporate organization as a monolithic entity in the rational model, through an organizational subunit orientation in the organizational process model to the individual decision-maker in focus of the bureaucratic model. In other words, the focus of rationality shifts from one model to another--overall corporate rationality, subunit rationality, individual rationality.

C. Mixed Structure and Process Models

Let us now move to some models that incorporate both a notion of the structure of the planning task and an outline of the planning process. We recall that a planning system is only completely described if both its structure as well as the process are laid out. Consequently, none of the structure or process models discussed this far give a complete picture of a planning system. Only few attempts have been made in developing more complete theoretical models that incorporate both structure and process.

Gilmore and Brandenbergs' model presents a structure for a top management planning framework.[1] This structure has three substantive elements:

--economic mission formulation
--competitive strategy formulation
--action program formulation.

Flow charted process models are developed for each of these structural steps as well as for an overall reappraisal step. The processes are thus:

-formulation of the economic mission, i.e. what kind of business should the firm be in, and what should its performance objectives be;

-determination of competitive strategy, i.e. finding the right product-market combination for effective accomplishment of the economic mission, and deriving goals for the functional areas;

-specification of program of action, i.e. finding efficient means for implementing competitive strategy;

-reappraisal, i.e. asking, on a continuing basis, where and to what extent should the master plan be modified.

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[1] Gilmore, F., and Brandenberg, R. G., "Anatomy of Corporate Planning," Harvard Business Review, November - December 1962.

Gilmore and Brandenbergs' process model seems to be of the rational choice model type. This is underscored by the specific inclusion of decision points to tie the subprocesses together so that suboptimization might be avoided, i.e. take advantage of synergy.

Ansoff[1] sees the overriding strategic problem as the "choice of the product-market portfolio of the firm." This is a relative narrow and operational focus. The role of planning is primarily to add efficiency to this process of product-market evolution. It should be noticed that strategic planning, thus, attempts to facilitate the adoption of the firm's resources to evolving environmental changes.

Ansoff conceives of the firm as a logistic process, transforming inputs into outputs, as well as a managerial process, designing and guiding the logistic process. In view of this he suggests a planning structure with three classes of decisions:

-strategic--establishing the relationships between the firm and its environment;

-administrative--establishing "structure" of the firm, to enable the process;
Structure in this sense is much broader than what we normally conceive of as the organization structure.

-operating--selection of operating levels for the variables under the firm's control.

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[1]Ansoff, H. I., Corporate Strategy, McGraw Hill, New York, 1965.

Ansoff[1] attacks classical theory of economics (and consequently also the rational choice process) on three grounds:

> -profit maximization is wrong, both descriptively (corporations don't operate that way) as well as normatively (other goals should be considered);
>
> -it views the manager as operating in a fixed structure, when actually much management effort is devoted to designing and re-designing the organization (its ourputs, inputs and structure);
>
> -it considers only economic variables, assuming no influence of behavioral and informational variables, which are critical to the difference to be observed between firms in similar economic positions.

The managerial process in Ansoff's scheme is thus explicitly distinguished from the rational actor process. His planning process concept seems to have many similarities with the organizational process model.

What are our major emerging conclusions from the discussion of the theoretical framework so far? One conclusion is that there seem to exist a fairly abundant number of conceptual models. These will normally address either the structure of the planning task or the process of planning. The planning structure models partition planning into separate tasks, usually three, according to the strategic versus tactical emphasis. The planning process models seem to fall into three categories, rational choice process, organization process and bureaucratic process, each having its distinctive emphasis. Consequently, it would seem to be a requirement that we always specifically state what type of planning process model we are talking about and in what way we consider the planning structure.

As noted a planning system can only be completely described in terms of both its structure and the process. Thus, when discussing theories that address only the structure or only the planning process we are taking a partial view on planning. Of course, we may in many instances want to do this deliberately. However, there is a danger that a complete view on planning is being claimed when only one of the structure or the process is being addressed.

When addressing planning process models it seems as if none of the three process ache-types can provide an entirely realistic description of actual planning process behavior on their own. The three seem to complement each other, not to be mutually exclusive. Again it seems important to be aware whether or not one is taking a partial or complete view of the planning process.

While a number of plausible conceptual models exist both for the planning structure as well as for the planning processes, almost no complete conceptual models for planning systems have been developed. The dominating conceptual viewpoints up till now have been related to partial elements of planning systems. The challenge ahead will be to pull partial conceptual models better together so that overall planning systems conceptual schemes can be further developed.

III. Empirical Research on Planning

In this section we shall attempt to survey empirical research on planning, and examine its relevancy when examined in the light of our discussion of the theoretical planning frameworks (Section II). Potentially we might organize the empirical survey along several lines, such as the research methodologies being used, the research issues addressed, the findings, etc. We shall take a first cut at clarifying the empirical data according to the methodology used. In principle there seems to be three major methodological options: large-sample survey research, in-depth clinical studies ("case-studies") or laboratory-based experimental studies. Given the richness of variables and complexity of their interrelationships that seems apparent in the planning field it is not to be expected that realistic laboratory studies are undertaken on a large scale. In fact, we shall only report one such study in this survey. Not unexpectedly a vast number of case studies have been undertaken within the field. However, many of these suffer from having been developed for teaching and not for research purposes primarily. We shall not review this class of materials extensively. The bulk of the empirical studies to be discussed therefore fall in the large sample survey category. We shall start out discussing this, and then discuss relevant case studies and summarize the research findings.

A. Survey Research

In this subsection, we shall classify the research as to what were the research issues addressed. We shall start out with questions about the acceptance of and benefits from planning. Then we shall discuss various aspects of the working of planning systems, with a major part of the emphasis

on a large scale Harvard Business School project. Finally, we shall discuss planning's role in the firm's interrelationship with its environment.

Planning's Acceptance and Payoff

Starting with surveys of the rate of acceptance of planning, i.e. the degree to which planning is being used, Ringbakk asserts that very few corporations had adopted what we would call systems for corporate planning prior to 1960. The major waves of adoptation came in 1962-1965 for U.S. firms and in 1964-69 for European firms.[1] Studies by Ringbakk[2,3] for the U.S.A. and by Kempner and Hewkin[4] and Taylor and Irving[5] for the United Kingdom indicate that the degree of use of formalized corporate planning is somewhat less than might have been expected. According to Ringbakk,

> "Organized corporate long-range planning is neither as well accepted nor as well practiced as suggested by the literature on the subject."[6]

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[1] Ringbakk, K.-A., "The Corporate Planning Life Cycle - An International Point of View," Long Range Planning, Vol. 5, No. 3, 1972.

[2] Ringbakk, K.-A., Organized Planning in Major U.S. Companies - A Survey Stanford Research Institute, 1969.

[3] Ringbakk, K.-A., Organized Corporate Planning Systems - An Empirical Study of Planning Practices and Experiences in American Big Business, Unpublished Ph.D. Thesis, University of Wisconsin, 1968.

[4] Hewkin, J. W. M. and T. Kempner, "Is Corporate Planning Necessary?", BIM Information Summary, December 1968.

[5] Taylor, B. and P. Irving, "Organized Planning in Major U.K. Companies," Long Range Planning, Vol. 3, No. 4, June 1971.

[6] Ringbakk, K.-A., 1969, op cit.

And Taylor et al. concluded that,

> "Corporate planning in major U.K. companies is neither as well developed nor as fully accepted as one might expect." [1]

A number of studies have been made to establish the potential pay-off of planning. Thune and House[2] undertook a study where from an initial sample of 96 corporations, 26 were matched in terms of industry and size into six industry groups. This study showed that, when measured in terms of earnings, companies with formal planning tended to achieve better performance after this. Herold[3] attempted to replicate the study of Thune et. al., but focused on two industries only and with a sample of only five pairs. Both in terms of sales and profits the companies with formal planning performed better than those with informal planning. Karger reports on a study comparing high-growth with low-growth U.S. corporations in which "93 percent of high-growth companies rated the 'Setting of Basic Objectives' and the 'Setting of Goals for the Years Ahead' as important factors whereas low-growth companies rated these items 81 and 88 percent respectively.[4] Although these differences are not large they nevertheless may suggest that the goal-setting process is more emphasized in effective corporations than in less effective ones. Taylor et. al.'s study of 27 large U.K. companies indicate

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[1] Taylor et. al., op cit.

[2] Thune, S., and R. House, "Where Long-Range Planning Pays Off," Business Horizons, August 1970.

[3] Herold, David M., "Long Range Planning and Organizational Performance: A Cross-Valuation Study," Academy of Management Journal, March 1972.

[4] Karger, D. W.,"Integrated Formal Long Range Planning and How to Do it", Long Range Planning, Vol. 6, No. 4, December 1973.

indicate that,

> "while any assessment of planning benefits must be largely subjective, it is perhaps worth noting that virtually all respondents were enthusiastic about the benefits to be derived."[1]

A final study by Perkins and Sugden also attempts to evaluate the effectiveness of formal planning systems.[2] This study was part of a large empirical research project on planning undertaken at Harvard Business School, and which will be discussed later. After stating definitions of the "purpose" of planning and planning's "effectiveness," an index of planning effectiveness was developed. Thus, the relationship between purpose and effectiveness was expressed in a single quantifiable measure. However, the study failed to come up with significant results.

A team of researchers at Carnegie-Mellon University under the leadership of Ansoff undertook a study of the potential pay-off from planning when making acquisitions.[3] The study solely addressed the phenomenon of diversification planning undertaked at the corporate level of the organization. Ninety-three corporations which had acquired 299 other firms were studied. Two different acquisitions planning behaviors were identified, namely those firms which took an unplanned opportunistic

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[1]Taylor et. al, op. cit.

[2]Perkins, Arthur E. and Barry K. Sugden, "Purposes and Effectiveness of Formal Planning Systems," in Vancil, Richard F., ed, Formal Planning Systems - 1971, Harvard Business School, Boston, 1971.

[3]Ansoff, H. Igor, J. Avner, R. G. Brandenburg, F. E. Porter, and R. Radosovich, "Does Planning Pay? The Effect of Planning on Success of Acquisitions in American Firms," Long Range Planning, Vol. 3, No. 2, December 1971.

approach and those which planned systematically. Measures of success were both objective as measured by profits and stock performance, taken from the Compustat tapes, as well as perceived effectiveness measures. The main results, which were all significant within reasonable confidence levels were as follows:

> "Although subjective evaluation of results by management does not differ greatly between planners and non-planners, objective financial measurements show a substantial difference . .... On virtually all relevant financial criteria, the planners ... significantly outperformed the non-planners....(Also,) they performed more predictably than non-planners. Thus, planners appear to have narrowed the uncertainty in outcomes of acquisition behavior."[1]

I undertook a study of what seemed to be more effective as opposed to less effective designs of planning systems for major capital expenditures. This study was heavily based on the contingency theory concept. In it, I attempted to correlate the "tailoring" of a system to the given setting of a company, and measured systems effectiveness according to an index of perceived effectiveness.[2] With this I found significant differences at the 95 percent or better level between the more effective and the less effective subsamples when it came to two our of 10 possible systems design elements. Using an index for the rate of financial growth as an alternative effectiveness measure, I found significant differences at the 95 percent or better level between more and less effective subsamples for only one of the 10 design factors. A third alternative effectiveness measure, an index for "the degree of confronting as a problem solving style," gave no signifi-

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[1] Ansoff, et. al, op. cit.

[2] Lorange, Peter, Tailoring the Capital Budgeting System to the Behavioral Style of Management, D.B.A. Thesis, Harvard Business School, Boston, 1972. See also Lorange, Peter, Behavioral Factors in Capital Budgeting, Norwegian University Press, Bergen, Norway, 1973.

cant differences between the more effective and the less effective subsamples along any of the 10 systems design dimensions.[1]

Given the apparent difficulties of estimating the effects of planning empirically, one might speculate that experimental research design approaches could be an alternative. Surprisingly, we know of only one experimental study of the effects of formal planning, namely, a study by McKinney.[2] The study focussed on how systematic approaches to strategic planning might aid in developing better corporate strategies. The effects of two alternative formal planning approaches were tested, namely,

> "the dominant concept for a formal approach to strategic planning -- it focusses on allocating corporate resources to meet opportunities in the environment. The other approach is oriented instead at detailing desirable improvements in the corporate strategy -- at the tactical elements that make up corporate strategy."[3]

These procedures were based on Cannon's strategy concepts.[4] The strategies were operationalized as computer-based check-lists and made available in the form of an experiment to Master's students for solving a policy case. Judges then rated the quality of these strategies. An important result emerged: The performance of the students using the "opportunity-oriented" planning system was much higher than the performance of the students using the "tactical" planning system. Thus, a broad perspective on planning seems advantageous at the strategic level.

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[1] This surrogate measure for systems effectiveness has been suggested by by Lawrence and Lorsch; see Lawrence, P.R. and J. W. Lorsch, Organization and Environment, Division of Research, Harvard Business School, Boston, 1967. The measurement issue in behavioral research will be discussed more in Sec. IV.

[2] McKinney III, George Wesley, An Experimental Study of the Effects of Systematic Approaches to Strategic Planning, Unpublished Ph.D. Thesis, Stanford University, Palo Alto, 1970.

[3] Ibid.

[4] Cannon, J. T. Business Strategy and Policy, Harcourt, Brace, and World, New York, 1968.

Given the number of factors that may affect the performance of a corporation, such as the degree of effectiveness of management systems other than the planning system, lag effects, etc. it seems a priori unlikely that one should be able to establish causal empirical relationships between planning and performance.

Therefore, not surprisingly, no "watertight" conclusion as to what are the real benefits from planning seems to emerge from the studies just reviewed. Another reason for the inconclusive results is probably the lack of several of the studies to specify what type of planning they have in mind. Except for the studies by Ansoff et. al. and Lorange, planning is being treated as a broad phenomenon, and little effort is being made to distinguish with what sort of planning one is dealing. Thus, the problem still remains in deciding what planning activities proved specifically advantageous. Despite these difficulties, it nevertheless seems safe to conclude that some empirical evidence exists that formal planning may pay off. In particular the results from the studies by Ansoff et. al. and McKinney support this conclusion.

General Pitfalls of Planning

Let us now discuss a few studies which address how to make planning work. The studies by Ringbakk and Taylor et. al. provide the best known "state-of-the-art" summaries of the field, to my knowledge, and will be reviewed in this section.

Ringbakk reports on a survey study of 250 companies, of which 65 companies participated in an interview study and 285 responded to a questionnaire

with 32 questions.[1] These companies were based in the United States, as well as in Europe. This study reveals that there seem to be ten common reasons why the planning process malfunctions:

1) Corporate planning has not been properly integrated with the rest of the company's management systems;

2) There may be a lack of understanding of certain dimensions of planning, such as lack of consideration of alternative strategies or inclusion of alternative courses of action;

3) Management at various levels in the organization may not be participating properly in planning;

4) A staff planning department has gotten the brunt of the planning responsibility;

5) There may be a misconception among many managers that they actually expect the plans to be realized despite that new events almost inevitably will change the assumptions of the plan;

6) Often too much may be attempted at once when starting formal planning;

7) There may be a lack of willingness among management to follow the plan in their operating decisions;

8) Extrapolations and projections may be confused with planning;

9) There may be elements of inadequate inputs in planning, such as too little environmental inputs, and too little participation in projections by top management, engineering and marketing personnel;

10) Small planning details may distract and hamper the development of an overall view on planning.

Some of these reasons simply seem to indicate a lack of general competence among management, notably reasons 4, 6, and 8. The other reasons, however, seem to indicate that planning in this large sample of real-life companies does not predominantly follow a mode of rational choice. Rather

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[1] Ringbakk, K.-A., "Why Planning Fails," European Business, No. 29, Spring 1971.

the nature of the problems strongly indicates that an organizational behavior planning process better describes what goes on in real life. (Look at problem 2, for example!)

Unfortunately, empirical data is only given to verify problems two, seven, and nine on the above list. Also, since the findings were not crosstabulated against subgroups of respondents it is impossible to conclude whether the findings are relevant to all types of planning or, say, only to planning at the corporate level and not at the divisional level, and so on. Thus, the fact that the findings do not correspond to a contingency (or are situationally tailored) limits the usefulness of the results. It should be noted that Ringbakk's sample includes mining and raw materials processing corporations as its biggest industry group. Such companies would normally be functionally organized while many of the fimrs in his other industry groups normally would be divisionalized. Also, the variance in sales and number of employees are high and indicate a heterogeneous sample. Thus, a contingency analysis of this kind of data seems appropriate.

Ringbakk's study is based on a conceptual model of corporate planning, PIPOS.[1] It is not clear from the research whether the model is arrived at after (i.e. as a result of) the empirical survey or prior to the survey. The PIPOS model has five classes of elements:

- Planning as a philosophy. Studies of the future, environmental surveillance and corporate audits should constitute process inputs. There might be a danger that the inputs will be too control-oriented;

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[1] Ringbakk, K.-A., op. cit., 1972.

- Inputs for planning. The major planning philisophy points should be that operating management should be engaged in and be fostering planning;

- Planning as a process. The planning process consists of the formulation of objectives and subobjectives, development of alternative strategies and action programs, evaluation of these in terms of resources, profitability and risk, deciding on one alternative, committing resources and formulation of programs. Significantly, this process goes on at three decision area levels, strategic, administrative and operating;

- Outputs from planning. The outputs, then, are specific finance, management development andmarketing plans;

- Planning as a system. Within the company's existing management system of organizing and leading, a system will soon be needed for implementation of plans and for monitoring and controlling the plan fulfillment.

The process element of Ringbakk's model bears strong similarities to the national actor model, which may not be too realistic. His own data have suggested that a organizational/behavioral model may be more in line with reality. The structure elements are finance, management development and marketing plans. Ringbakk's model is therefore a complete model of a planning system in that it specifies both the process and the structure. Although Ringbakk's conceptual model is neither specifically developed on the basis of prior systematic field data nor verified by posterior data collection, it is nevertheless a strength of the scheme that it has been developed "in parallel" with the researcher's heavy field research involvement. Thus, we assume that intuitive empirical testing of the model has taken place.

Taylor and Irving undertook a survey study of corporate planning practices in 27 large United Kingdom based corporations.[1] They defined corporate planning to be:

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[1]Taylor et. al., op. cit.

a) The formal process of developing objectives for the corporation and its component parts, evolving alternative strategies to achieve these objectives and doing this against a background of a systematic appraisal of internal strengths and external environmental changes.

b) The process of translating strategy into detailed operational plans and seeing that these plans are carried out.[2]

Thus they limit their study to corporate level planning and solicited response from corporate planners only. Consequently there may be a systematic bias in the data.

The first finding of Taylor et. al. is that formal planning seems to require a particular type of systematic upper management attitude, and that informally managed organizations will have to change management style if attempting to undertake planning. This seems to raise the question of seeing style as an independent variable, i.e. as a given, to which we shall have to tailor the system's design. Thus, failure of planning may result from inappropriately designed systems for informal organizations, and are not necessarily the "fault" of the informal managers.

Twelve major reasons were given for why formal planning was needed, 36% of the reasons quoted related to "external" reasons, 40% related to "internal" needs and 24% were unspecified. The dominant external need shown was to enable better response to environmental changes, while the major internal need was to better coordinate overall activities following decentralization. As to what factors had provided major stimulus for planning, the occurrence of tangible events such as major personnel turnover, organizational changes or a crisis seemed to be very significant.

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[1]Taylor et. al., op. cit.

The major internal "political" problem arose when planning was seen as embracing activities traditionally carried out by other functions. The role of careful and open information and communication, attempts to preserve old interests, and the active role of the top management were seen as important factors in removing political problems.

As to the role of the planner it was found that "....running through the (responses) the common theme was that planning is a line job. The role of the planner therefore is not to do the planning but to design, sell and direct the planning effort."[1] Given that Taylor et. al. look at corporate level only it seems to be a very plausible finding that the planner should be a system's "catalyst," not a plans "analyst." However, at the divisional or functional levels the role of the planner does not necessarily have to serve an identical function. In fact these planners are probably "doers" much more than catalysts.

As to the chief executive's involvement, it was found that 33% of the chief executives were said not to be personally involved in strategic planning. This seems to be consistent with Ringbakk's finding that only 10% of the chief executives participated in the original development of plans.[2] Three major reasons were cited for lack of the top executive's involvement: misunderstanding about the nature of the planning process, short-terms operations orientation and lack of planning philosophy.

The line managers were cited to have various types of motivations for planning, the most important being that planning would help them do a better job (30% response frequency), the second being corporate pride (22%

response frequency). Only 3% response frequency indicated an interest in the role of planning in capital expenditure allocations and its linkage to control. Somewhat surprisingly, this seems to indicate that planning's role in the resource allocation process is unemphasized, that is that line managers do not see the full value of planning as a tool for "narrowing down options." A general problem when interpreting the study of Taylor et. al. is that a number of the stated findings seem too sweeping since the underlying planning process is not well specified. Nevertheless, the predominant planning process seems to be resemble more the organizational or the bureaucratic models than the rational actor model. In this respect Taylor et al.'s findings seem to agree with Ringbakk's. Also, there seems to be a general pattern that those companies which faced trouble of one sort or the other with the effectiveness of their planning seemed to lack a good understanding of what might be a realistic conceptual scheme for the planning process. Thus, it seems to be important that a company explicitly acknowledges what type of planning process model it will attempt to adopt, and then to allow a consistent design of the planning process. Without this it may for instance easily happen that the systems designers attempt to improve on a rational choice process while implicitly a behavioral planning process is predominant.

Harvard Business School's Data Bank Project

The so-called Harvard Business School Data-Bank Project is a major systematic large-sample field research effort within the planning area, and will be discussed in relatively much detail. Under the direction of Professor Richard F. Vancil of Harvard Business School, an ambitious undertaking was carried out during 1970 and 1971 to design and develop a data-bank for survey research of formal planning activities.[1] Typically, survey research to a large extent contains questions about the general background of the respondent in order to obtain a clear picture of the company's situational setting. The situational factors (i.e. the set of independent variables) may partly or entirely relate to several systems design issues (i.e. sets of dependent variables). Because of this, there is potentially a great economy in building a data-bank as a research tool: the background information--the independent variables--may be collected once and remain constantly accessable in the data-bank. The dependent variables may then be collected separately by means of a number of short questionnaires, each addressing the particular research question in focus.

There were two basic hypotheses that were underlaying the Harvard research project. First, in order to be effective, a formal planning system would have to be designed in such a way that it fit the given corporate setting. Since the choice of systems design elements would have to be "tailored" to each

[1] Detailed description of how the data-banks were set up, the questionnaires, variables, as well as frequency distributions of the responses can be found for 1970 in Aguilar, Francis J., Robert A. Howell, and Richard F. Vancil, Formal Planning Systems-1970, Harvard Business School, 8-171-141, Boston, 1970, and for 1971 in Vancil, Richard F., op. cit.

given situation there could be no one best way of planning systems design. Secondly, there would be fundamental difference between the type of planning task undertaken at the corporate level of a divisional corporation and planning undertaken at the divisional levels as well as at the corporate level of a divisionalized corporation. In the first case the task would be concentrated on planning which focussed on the balancing of the overall corporate resources between existing and potentially new areas of business involvment, i.e. "portfolio" planning. In the second case the task would be to plan for a given business in which the division or the functionalized corporation is chartered to be involved. Thus, this broad set of underlying premises was believed to be valid. This dictated a contingency-based research approach.

The criteria for participation in the Harvard data-bank were set in such a way that the sample would be skewed intentionally so that it was limited to companies with annual sales of $100 million or more and which were believed to have individuals ("planners") engaged in formal planning as a major part of their duties. The sample was limited to manufacturing organizations only.

Those who completed the 1970 questionnaires replied to nearly 200 "questions", many with multiple parts. The total number of variables coded per case exceeded 1000. The "core" variables of the 1970 data-bank were grouped into the following categories:

a. Situational factors; size (3 variables), historical performance (5 variables), complexity of management task (8 variables), organization and management style (10 variables)

b. Planning systems characteristics; planning philosophy and purpose (11 variables), planner's role and relationships (13 variables), planning processes (9 variables), planning techniques andprocedures (10 variables)

c. Effectiveness measures; perceived impact of planning (19 variables), bias and accuracy (10 variables).

In accordance with the hypothesis that planning might take place at several organizational levels, the planning units were broken into four categories: (1) a diversified corporation, consisting of a set of product-oriented divisions (42 respondents), (2) a functionally organized corporation (5 respondents), (3) a group of divisions or subsidiaries of a diversified corporation (2 respondents), or (4) a division or subsidiary of a diversified corporation (11 respondents). No attempt was made to solicit responses from functional department planning units.

During 1971 a second set of questionnaires was sent out. Emphasis was put on reducing the number of questions asked and refining the questions in order to reduce ambiguities. The respondents were broken down into three different classes: (1) business planners (divisions, subsidiaries, or groups of such units, primarily responsible for planning for their business units-30 respondents), (2) planners in functionally organized corporations (responsible for both business planning and corporate planning-5 respondents), (3) corporate planners (corporate--or group-level planners, primarily responsible for coordinating the planning of their subordinate "business" divisions, and/or other aspects of corporate diversification-55 respondents). The core variables of the 1971 Data-Bank fell into the following broad categories: Corporate demographics (18 variables), divisional demographics (20 variables), organizations structure (37 variables), corporate objectives (18 variables), purpose and effectiveness (20 variables), role of planner (36 variables), formal planning systems design (38 variables).

The tangible results from the Harvard Data-Bank project led to a conceptual scheme, two doctoral theses and a number of shorter faculty and student reports. We shall briefly review these results.

Vancil and Loranges' planning systems conceptual model.

A conceptual model for long-range planning systems is developed by Vancil and myself, on the basis of indirect empirical testing through parts of the Harvard data bank project[1] as well as through extensive field experience. However, no explicit data collection for developing or testing has been undertaken. Although the model may be modified to other organizational settings, it is explicitly developed for corporations with divisional organization structure. It is recognized that strategic decision making generally will be different at corporate, divisional and departmental organizational levels in accordance with the decentralization rationale behind the divisional structure.[2] Thus, at the corporate headquarter level the concern will mainly be with managing the totality of divisions, or business area involvements, say by maintaining a desirable balance of the "portfolio" of businesses.[3] At the division level the primary concern often will be with strategic management of the given business that the division is in. At the

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[1]Vancil, Richard F., and Lorange, P., "Formal Planning in Divisionalized Companies," forthcoming, Harvard Business Review, Jan.-Feb. 1975.

See, for instance, Chandler, Alfred D., Strategy and Structure, MIT Press, 1962, or

[3]Carter and Cohen also take a "portfolio" point of view to planning at corporate level. See Carter, E.E. and K. Cohen, "Portfolio Aspects of Strategic Planning", Journal of Business Policy, 1972. The use of the word "portfolio" does not, of course, imply that we claim that one can make use of the analytical tools of efficient capital markets portfolio theory.

departmental level the concern will be with taking functional decisions, such as marketing-or production strategy. In line with this, there will be three levels of planning, all distinctly different, and which can be called corporate planning (or, alternatively,"portfolio" planning), business planning, and programming (or, alternatively, functional planning). These three planning types constitute the structural elements of this conceptual planning systems model.

The other part of the system is an outline of a planning process model, exemplified by a series of time-phrased steps, to a coordination between the different planning elements in such a way that strategic options are "narrowed down" in a workable and beneficial way into a budget. Thus, the purpose of the planning process is to provide a vehicle for transforming the strategic options of each organizational level into a budget agreeable to the entire organization.

There are several important characteristics of the process: First, it is based on an orderly pattern of interaction among the organization units. Secondly, it is based on reaching commitment corporate-wide on a gradual narrowing of the company's direction, by going through three "planning cycles". The first cycle culminates with agreement on operational objectives, the second by agreement on the long-range plans and the third cycle by agreement on the budgets. The process is iterative, in that "a lot is typically going back and forth" among the participants in the process, through meetings, reviews, discussions and negotiations.

When comparing Ringbakk's and Vancil and mine "semi-empirical" models they seem to be generally compatible in that both provide complete planning

systems frameworks identifying both structure and process. However, the latter is probably more operational than the former and for two reasons: First it is indicating which organizational units that should carry out what, and when to do it. By not explicitly recognizing organizational structure Ringbakk's model becomes maybe too general to be operational. Secondly, the planning process is structured as an organizational model, not a rational action model as was the case in Ringbakk's scheme. For instance, organizational subgoals and subgroup commitments are catered for. Also negotiation between organizational elements is a central feature. Systematic empirical testing would however be necessary to further verify any of the Ringbakk or Vancil and my models. At the present stage, the main value of both stems from the fact that they have been developed in close contact with real-life planning settings and that they provide complete conceptual schemes for a planning system (i.e. both structure and process).

Empirical testing of contingency designed planning systems.

Two Harvard studies addressed themselves specifically to exploring the contingency hypothesis to formal planning systems design. One was undertaken by myself and addressed some of the design problems which arise when attempting to suggest planning systems to handle major investment decisions in large industrial companies.[1] I attempted to evaluate the supposition

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[1] See Lorange, Peter, Tailoring the Capital Budgeting System to the Behavioral Style of the Management, doctoral thesis, Harvard Business School, Boston, 1971. See also Lorange, Peter, Behavioral Factors in Capital Budgeting, Scandinavian University Books, Bergen, 1973.

that, in order to be effective, a formal system for capacity expansion planning would have to be designed in such a way that the specific situational setting of the firm be reflected. Focusing attention on behavioral situational variables in particular, I proposed that ten controllable systems design factors, or dependent variables, be considered as elements of such a planning system, and seven situational human behavior factors, or independent variables, be used to reflect the setting of a firm. In order to explore the relationship between dependent and independent variables in effective systems, I developed an index of perceived effectiveness. Out of a total of 87 respondents, 30 turned out to be highly effective, 40 were in the middle, and 17 were less effective. By means of multiple regression I estimated the multivariate relationships between the seven independent variables and each of the dependent variables, both with the effective and the less effective samples as bases.

Only four of the predictions were highly significant, namely the degree of linkage of the project to plans and budget, the incorporation of the shape of the cash-flow pattern, the degree of generality of the analytical approach and the commitment to improvement of the planning method. Running factor analysis on the dependent and independent sets of variables, four situational, "independent" factors and four "depenent" factors were identified. It turned out that one design factor, the degree of detail in the system, depended strongly and positively on management's conflict resolution behavior. Two other design factors, technical complexity in the system, and the commitment to systems improvement, depended negatively on three factors: management's conflict resolution behavior, management's R & D orientation, and management's concern

for operations. The final design factor, the financial orientation of the system depended positively on both management's conflict resolution behavior and the planners' competence. In general, the multivariate analysis based on the factor-analysis reached similar conclusions to those arrived at in our multiple regression analysis. Although not conclusive on a general basis the study provided four instances of verification of the contingency design approach to effective planning systems design.

Another study to test aspects of the validity of the contingency theory to systems design was undertaken by Vancil who addressed how to develop schemes for tailored business planning, which was distinguished from portfolio planning.[1] He started by running a number of simple correlations between a number of industry characteristics and business characteristics, as well as correlations within the two sets of characteristics. Perhaps the most significant result of this was that a large number of paired relationships seemed to exist, and that any one industry or business characteristic might be related to several others. Vancil also undertook a number of progressive analyses of independent variables relating to a given design feature. First, he ran simple correlations with the dependent variable. Then he selected significant correlations for multiple regression while progressively reducing the number of independent variables in order to finish with the "best" ones. Unfortunately, the approach did not reveal many intuitively meaningful results.

Vancil concluded that disappointments of the kind that few significant

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[1]Vancil, Richard F., "Tailored Business Planning," in Vancil, Richard F., ed., op. cit., pp. 145-166

multivariate relationships seem to exist might be expected for such risky projects as attempting to describe corporate practices at a very detailed level. The approach might simply not work in a relatively new and rapidly developing field such as long-range planning, given our limited ability to specify plausible a priori hypotheses which then would be tested through design of measures and collection of data specifically for the purpose. Thus, one reason for the inconclusive results of Vancil's as well as my own study may be that neither hypotheses nor data were directly relevant to the problems we wanted to address. Another possible reason may be that the research design itself was inadequate to study such a large and apparently complex set of problems as contingency-based design of planning systems. Although the data bank contained a large number of "cases" with data on corporations' planning practices the causal relationships may well be so unique for each case that it may be unrealistic to expect general relationships to emerge. This may be so even if the number of responses had been substantially increased.

Other data bank studies.

A number of other studies were undertaken as part of the data bank project to explore aspects of systems design. In general these were rather explanatory in nature and will be only cursorily dealt with here. As to the roles of various executives in planning, there seemed to be a difference between a corporate planner's and a divisional planner's involvement,[1] the "track record"

[1] Lorange, Peter, "The Planner's Dual Role-A Survey of U.S. Companies," Long-Range Planning, March 1973, pp. 13-16

of the planner may be important,[1] and the line executive must be centrally involved.[2] The goal-setting process was found to be an important part of planning.[3,4] It was found that the planning system tended to become more tightly linked to the management control system as time evolved, both in terms of similarity of the plan's and budget's content, the timing of the planning-budgeting sequence as well as the degree of contact between the planner's and controller's offices.[5,6] As to the planning's role in acquisition it was found that planning and the planner might play a useful role in identifying areas of acquisition.[7,8] The findings on acquisition planning are strongly corroborated by Ansoff et. al. (their study is not part of the Harvard data bank

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[1]Greiner, Larry E., "Integrating Formal Planning Into Organizations, in Aguilar, Francis J., et. al., eds., op. cit., pp. 85-109

[2]Ewing, David W., "Involvement of Line Executives in Planning," in Aguilar, Francis J., et. al., eds., op. cit., pp. 65-58.

[3]Aguilar, Francis J., "Setting Corporate Objectives," in Vancil, Richard F., ed., op. cit., pp. 13-21

[4]Muray, Thomas F. and William F. Tuxbury, "Plan Review Process: Negotiated Goal Setting," in Vancil Richard F., ed., op. cit., pp. 34-56

[5]Shank, John K., "Linkage Between Planning and Budgeting Systems," in Aguilar, Francis J., et. al., eds., op. cit., pp. 109-123. See also Shank, John K., E. G. Niblock and W. T. Sandalls, "Formal Planning Systems: Getrin; Creativity and an Action Orientation," Harvard Business Review, November-December, 1972

[6]Camillus, John C., Formal Planning: Creativity vs. Control, doctoral thesis, Harvard Business School, Boston, 1973.

[7]Tennican, Michael L., "Diversification by Acquisition," in Aguilar, Francis J., et. al., eds., op. cit., pp. 123-147

[8]Cash, William H. and James M. Revie, "The Long-Range Planner and Acquisition Planning," in Vancil, Richard F., ed., op. cit., pp. 206-234

project) who concluded that companies using formal planning significantly had better performance than those who took a less formal approach to acquisition.[1]

Among the reasons for the generally low degree of conclusiveness that emerged from the other Harvard data bank studies are probably the same as already discussed, namely lack of precision in hypothesis-formulation (some of the studies did not state hypotheses at all) and in data gathering, as well as the high degree of variability of the underlying data. There was possibly also a tendency to "over-kill" the data by forcing it to be analyzed by means of rather powerful multivariate techniques. Simple frequency distributions, gross classifications, and cross-tabulations often yield more meaningful research insights than the use of correlation, multiple regression and factor analysis. Given that the number of man-hours put into this project as well as its costs were substantial it must be concluded that in retrospect the tangible results were disappointing.

Interrelationship With Environment

Let us now turn to a discussion of studies that address the interrelationship between the environment and the long range planning process. The classic study is the one by Aguilar, in which he examines approaches for scanning the business environment.[2] His sample numbered 137 managers from 41 companies, mainly in the chemicals industry. Aguilar argues that it is important to recognize strategic scanning as part of

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[1] Ansoff, H.I., et. al., op. cit.

[2] Aguilar, F. S., Scanning the Business Environment, MacMillan, New York, 1967.

the long-range planning process. Key variables or areas of interest should be assigned to senior executives, so that one person is responsible for monitoring specific areas of development. If staff scanners are being used, it seems essential that these people work closely with the senior managers in charge. An important criterion for scanning effectiveness is the principle of information/interest/influence cognicence, i.e. that, in order to be usefull the information to be received by a person must be of interest to him and also must be within his area of influence. This seems to be in accordance with the bureaucratic model for the decision-making process and the findings of Lindbloom.[1]
Aguilar also identifies major barriers to scanning, namely lack of awareness, lack of ability to comprehend, and several distortion factors. His study thus seems to verify Simon's concept of "bounded rationality," limitted reach and the tendency to focus on what is familiar, i.e. the organizational behavior decision process model.[2]

Taylor has done a study of strategic planning for social and political change.[3] Based on a survey of effects on business from social and political trends, new legislation restricting business, the trends in lawsuit against corporations, and the ongoing debate on social responsibility,

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[1] Lindbloom, C. op. cit.

[2] Simon, H., Models of Man, MacMillan, New York, 1957, pp. 263 ff, and March J. and H. Simon, Organizations, Wiley, New York, 1958, pp. 48 ff

[3] Taylor, B., "Strategic Planning for Social and Political Change," Long-Range Planning, Vol. 7, No. 1, 1974

he concludes that the problems of corporate adjustment to long-term social and political changes are of major importance. He states that an important task for the planning system is to facilitate better corporate adjustments. Taylor suggests a number of principles to be followed by the corporate planner to undertake strategic planning for social and political change. The most important principle is to convince top management that this problem exists.

Rhenman has done a major study of the task of planning for organizations' adjustments to environmental changes.[1] His data consists of in-depth consulting-type experiences with a number of Swedish corporations. Rhenman's basic hypothesis is that organizations will be subject to social control. Organizational problems are symptoms of dissonance between the organization's course of actions and the demands of its environment. Rhenman identifies possible paths of strategic response to the environment for corporations as well as for other types of organizations.

The research on long range planning's role in the corporation/environmental interface has begun to address central problems. Particularly, two major types of unresolved questions seem to emerge. First, to what extent should a formal planning system play a role in allowing the corporation to undertake strategic reorientations as a response to opportunities and/or threats in the environment ? Should we attempt to design and maintain a formal long-range

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[1] Rhenman, Eric, Organization Theory for Long Range Planning, Wiley, London, 1973.

planning system which will be able to maintain effectively both internal and external long-term corporate effectiveness? Alternatively, would two distinctive systems be more appropriate? Related to these questions will be the problem of making sure that one of the two tasks will not dominate the other as the systems evolve. There seem to be several examples of such imbalance. For instance, a formal planning system may get "tighter", more rigid and detailed as it develops over time, probably increasing the ability of the system to undertake adequate strategic response to environmental opportunities. On the other hand, many of the so-called "conglomerates" had extensive planning for acquisitions, that is, for external strategic re-orientation while lacking effective planning for the on-going business.

A second problem area relates to the question of what phenomena in the environment are to be monitored or scanned. Organized efforts to scan the business environment will probably be rather valueless unless the phenomena we are scanning turn out to be the most relevant ones. This seems to indicate a need for a better understanding of how to isolate key variables or key areas, which can then become the basis for the scanning. Without a better notion of what will most likely constitute the key variables our efforts to plan for environment will probably be less successfull.

B. Case Studies

A number of case studies have been done in order to illustrate the handling of various aspects of planning in real-life settings. Because it would be an almost impossible task to undertake a review of the already

abundant existing body of case on planning, we shall merely indicate some of the major issues that seem to emerge, based on the subset of cases that we are familiar with. Although valuable as enforcements of the real-life "flavor" of planning, most of the body of cases suffer from two types of limitations when being used for research purposes. First, most of the cases have been developed primarily for teaching purposes. Since pedagogical objectives were the "raison d'etre" of these studies, several of the cases might be expected to be deliberately biased, and consequently it may be that important aspects of the overall objective picture may have been left out. Second, in many instances planning is described in great detail while a description of the business setting will be inadequate or left out. Given that meaningful planning systems design choice considerations can take place only in the context of a specific organizational setting, it is of very little use to learn about such planning practices per se. Thus, an important requirement for a model case is that it adequately represents the situational setting of the company in question.

There are a number of cases on the start-up and evolution of formal planning systems. Some recent British case studies indicate that the companies generally went through a four stage "pre-planning" life-cycle.[1] In the initial step, they went through an entrepreneurial stage with rapid growth in sales and profits. Their second step was a maturity and stagnation stage dueing which profits and sales growth were tampering off. This would typically be followed by a diversification and acquisition stage, with rapid growth in sales but often disappointing profits

[1] Bayes, P., (editor), Case Studies in Corporate Planning, Pitmans, London, 1973.

growth. Finally, step four consisted of a stage of rationalization and reorganization. At this time introduction of a formalized corporate planning system would typically take place.

Systems design elements of the process of start-up and evolution of planning systems, as illustrated by a number of case studies,[1,2] can be generalized in table 3:[3]

Table 3: Planning Systems Situational Design

Design Issue	First Year of Formal Planning	In Later Years ("mature" systems)
1. Communication of goals by corporate level to divisional level.	Not explicit	Explicit
2. Initiative for divisional level's goals	Bottom-up	Negotiated
3. Focus of division's planning activity	Financial	Strategic
4. Linkage of plans to budgets	None	Tight

Objective- and goal-setting aspects that are highlighted are goal-setting as part of the start-up of formal planning,[4] the evolution of the goal-setting process,[5] corporate and divisional involvement in the process,[6] and the concept of the "planning gap".[7]

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[1]See in particular the case series "Norton Company," (A)-(D), BC297, 298, 300, 301, Harvard Business School, 1969, 1970, and 1971.

[2]"Time Incorporated," Harvard Business School, BC290, 1967.

[3]Anthony, R. N., J. Dearden and R. F. Vancil, Management Control Systems, Irwin, 1972, Chapter 9, p. 482.

[4]"Coca-Cola Company," (B), 2-372-080, Harvard Business School, 1971.

[5]"Massey-Fergusson, Ltd.," (A), BC348, Harvard Business School, 1971.

[6]Ibid.

[7]"Univis, Inc.," AMP250, Harvard Business School, 1967.

A large number of cases focus on elements of planning process design. One problem is the design of integrated systems for planning, budgeting and control[1], particularly with emphasis on alternative practices for linking planning and control.[2] The viability of planning and the roles of the planners and the chief executive are also extensively dealt with.[3,4] Another planning system design issue is how to manage internally generated discretionary funds for strategic expenditures, such as R & D, marketing and research and introduction of new products.[5,6,7] A number of cases illustrate the use of specialized planning tools, such as initial efforts to make use of computer-based planning models,[8,9] the

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[1]"Galvor," (E), IMEDE-Management Institute, 1968.

[2]"Quaker Oats Company," 9-172-033, Harvard Business School, 1971.

[3]"The Coca-Cola Company," (C), 2-372-080, Harvard Business School, 1971.

[4]"The State Street Boston Financial Corporation," 4-172-312, Harvard Business School, 1972.

[5]"Kramer Drugs, Inc.," (A) and (B), BC287, 288, Harvard Business School, 1967.

[6]"Pro-Care, Inc.," BC356, Harvard Business School, 1971.

[7]"Texas Instruments, Inc.," 4-172-054, Harvard Business School, 1972.

[8]"Dyco-Chemicals," (A) and (B), 4-172-257, Harvard Business School, 1972.

[9]"The Sun Oil Company," (A) and (B), BC 3-5, 306, Harvard Business School, 1970.

use of computer-based models for strategic planning,[1] and interactive models for testing alternative strategies to portfolio planning.[2] Finally, there are extensions of planning process design concepts to complex organizational structures, so-called "matrix organizations," and to the multinational corporations.[3,4]

Dominating characteristics of the planning process described seem to be such issues as the use of the planning system to increase personal power, interpersonal friction between persons, between organizational units, etc. The level of rationality seems more often to be concentrated on a person or an organizational subgroup rather than on the organization as a whole. Planning procedures that emphasize rational choice generally do not function the way they were intended. The descriptions of real-life planning practices taken as a whole strongly seem to indicate that the rational actor planning process model is of relatively little value to characterize actual planning behavior. Both the bureaucratic model and the organizational model seem to fit reality much better. Oddly enough, in many case instances the bureaucratic model may be taken as an example of how the planning process actually works, while the advocates for improvement of the process (it may be the corporate planner, the president, or others) attempt to move it towards the functioning of a bureaucratic model. In total, the case studies lent definite support to a planning process resembling the bureaucratic model and also to the organizational behavior model. The rational choice model, on the other hand did not seem to resemble real life planning processes.

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[1] "American Airlines, Inc.," BC 303 , Harvard Business School, 19 .

[2] "Gotaas-Larsen Shipping," (A) and (B), Massachusetts Institute of Technology, 1974.

[3] "A. B. Astra," (A), (B), (C), and (D), IMEDE-Management Institute, 1974.

[4] "Larsen and Toubro Ltd., (D) and (E), Indian Institute of Management, 1974.

C. Overall Evaluation of the Empirical Research

Where does the empirical research efforts take us? What is the synthesis of the current state of the art? How well have various issues raised been answered empirically? We shall summarize the empirical survey section by identifying the major conclusions that seem to emerge. Although there seems to be sufficient agreement between theory and empirical evidence when it comes to a number of major issues to justify the classification of these as more or less resolved, it should be stressed that our generalizations will be confined within the narrow focus of privately owned medium-to-large size corporations, and that these corporations fall predominantly within manufacturing.

Our first generalization relates to planning typologies. It has been well documented that the divisionalized organization structure offered an effective response for many large corporations to the various types of problems of information-handling that emerged as companies grew in size, production- and marketing-complexity and risk-taking exposure.[1] Decentralized decision-making became a necessity, and, as a consequence, key decisions were no longer being taken only at the corporate organizational level. For instance, in the typical divisionalized corporation we may identify three classes of strategic decisions, each associated with one organization level. At the corporate level the corporate strategic decisions will focus on maintaining or modifying the overall "portfolio" of businesses that the firm is in. At the divisional level the strategic decisions will focus on maintaining

[1]See, for instance, Chandler, Alfred D., Strategy and Structure, MIT Press, Cambridge, 1962, or Morris, William T., Decentralization in Management Systems, Ohio State University Press, 1968.

the viability of the business or (relatively narrow) family of businesses that the division is engaged in. At the departmental level the strategic decisions will focus on the marketing programs, production programs, etc. For a functionalized corporation, on the other hand, the corporate level strategic decisions will closely resemble the divisional decision-making of the divisionalized firm, because of the similar focus on a relatively barrow business range. Strategic decisions of the functional departments will be of a similar nature both for divisionalized and functionalized corporations.[1]

Given these fundamental differences between the nature of strategic decision-making at the various organizational levels we will also have different types of planning tasks at the three levels. Thus, the nature of planning at the corporate level of a divisionalized corporation will be fundamentally different from the nature of planning at the division level of the divisionalized firm or the corporate level of the functionalized firm. The former deals with planning the "portfolio" of businesses; the latter deals with planning for one business. Functional planning, in turn, will also be distinctively different, dealing with "programming" departmental strategic activities.

The planning literature, as of today, generally seems to recognize that there is not one but several distinctive types of planning. This is reflected in some of the more recent conceptual schemes, and supported by the findings of a number of the empirical studies. By this stage we should be ready to accept the necessity of distinguishing between the distinctive classes of planning, and to reject the view of planning as a homogeneous entity.

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[1]See Lorsch, J. W. and Allen, S. A. III, Managing Diversity and Interdependence: An Organization Study of Multidivisional Firms, Division of Research, Harvard Business School, Boston, 1973.

The second issue, that by now seems to be generally accepted, is that no universal approach exists to planning systems design. Virtually every corporation will be different from the others at least along some dimensions. A planning system should be designed to support strategic decision-making for the given company. It should be "tailored" to fit the situation and requirements of that company. Since firms' situational settings generally differ no universal or standard approach can be expected to exist. Empirical evidence strongly supports the concept of necessity for contingency design. At present, we should therefore abandon generalizations about planning systems design choices that claim to be universal, and focus on the development of contingency-based design principles.

What do we know about the importance of factors in the contigency-based design of planning systems? Unfortunately, we are forced to admit that the present state of the art does not provide much insight into what the strengths and natures of the relationships between situational factors and systems design variables actually are. However, we may claim that the situational factors that dictate the system's design often fall into four classes, the strategy of the organizational unit, the people, the unit's other systems and the environment. Of these probably the strategy factor is the one least observed as a limitting factor in the systems design.

The third issue that we shall identify as "resolved" deals with the necessity for planning systems to be modified over time so that they evolve in a satisfactory direction. The factors describing the situational setting of a firm will not be constant over time. The

corporation's environment will change, and as a result, managerial actions of the firm itself will change, say by expanding into a new business area. Finally, the people in the organization will change over time as a result of being exposed to a formal system. Thus, they learn and gain experiences. Hence, it becomes necessary to modify the planning system itself so that it continues to be tailored to the actual setting. Therefore, the evolution of a planning system will have to be monitored over time. No system will stay effective if left without maintenance.

The final issue that we shall identify as "resolved" deals with the characteristics of the nature of the planning process. We shall claim that this process is not predominantly of the rational actor type. Although both bureaucratic-, organizational- and rational actor process elements probably will be present in planning processes the prior two will be dominant.

At present, therefore, we have arrived at some general findings which imply that useful progress has been made within this field of research. In a new field, such as planning systems design, however, initial research will often be characterized by the assumption that one will tend to be largely preoccupied with dicovering the essential elements of the overall program setting. The discovery of universal elements is necessary, but alone it provides a static understanding. The present empirical studies may be seen as having been able to identify a number of universal elements. Beyond this, however, the empirical studies represent an attempt to conceive of variables and suggest patters of variation.[1] Admittedly, at present we know

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[1] Thompson gives an interesting analogous reasoning to this, but applied to organization theory. He sees the growing attention to more complicated patterns of variability as a sign of maturity of organization theory. See Thompson, James D., Organizations in Action, McGraw Hill, New York, 1967. See also Holt, R. T. and J. E. Turner, The Methodology of Comparative Research, The Free Press, Glencoe, 1970.

little about which relevent dependent or independent variables should be considered, and furthermore, we know next to nothing about how these variables relate specifically to each other. Nevertheless, the present body of empirical studies represent a step towards the exploration and understanding of the research problem outlined at the outset of this paper.

IV Future Research Needs

Before discussing avenues for future research lets us set down three elements of what may be a useful research philosophy at this stage.

Research Philosophy

The conclusions regarding planning typology differentiation, contingency-based planning systems design, necessity of continuos systems evolution and the non-rational actor model characteristic of the planning process are results of abundant research documentation, both theoretical and empirical. The first element of a research philosophy should thus be that we adhere to what is resolved, and take off from there. Present research should, for instance, recognize the basic different planning processes at work. Unfortunately, it seems as if some of the recent research still faulters just on this point. In these cases the planning phenomenon investigated are not specified to a sufficient degree.

The second element of a research philosophy may be that, based on our judgement of the limitted success of a number of past reaearch.

efforts, grand scale theorizing and/or empiricism may be of relatively less benefit than projects that are more narrowly focussed.[1] Given the generally large number of variables and relationships in planning research problems it seems more likely that a number of studies with specific and narrow focus will yield more insights than broader scale studies. This will better allow us to work out more specific and sharply focussed hypotheses, better enable us to come up with ways of measuring the phenomena, etc. Experience both with theoretical and empirical studies seems to support a focussed point of view.

The final element of our research philosophy shall deal with the danger of viewing planning in vaccum as a more or less narrow and well established discipline without seeing it as a part of the larger administrative systems of the firm.[2] It is a tendency in many fields, and planning is included, to "bolster" the research in the areas by ignoring the relationships to larger underlying problem complexes. Efforts should be made to avoid this.

Let us now discuss some research issues that seem to have high potential payoff, given the present state of the art of planning theory and practice.

A major area of continued research is concerned with how to design more effective formal systems for long range planning. Much of the

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[1] See Merton, R. K., op. cit.

[2] With an administrative system we mean the totality of the corporation's organizational structure, planning-,control-, management information- and corporate reporting-systems. Scott Morton uses the term decision support system in a basically analogous but somewhat narrower sense. See Scott Morton, M. S. and Gorry, A., "A Framework for MIS", Sloan Management Review, Fall 1971.

efforts up until now seem to have been centered on deriving and improving systems for the long-term management of the on-going business, i.e. the existing decentralized resource pattern of the firm. On the other hand, relatively less emphasis seems to have been put on providing long-term reorientation as a response to external opportunities and threats. Given that the "internal" as well as the "external" tasks of planning seem important, we shall classify the research issues into those that address "internal" versus "external" planning issues. As a third issue we shall include the question of multiple objectives in planning. This issue becomes particularly relevant because of the "external" issues. When discussing "internal" planning we need only consider traditional financial performance objectives.

"Internal" Issues

The major issue for continued research on "internal" issues of planning is to come up with a better understanding of contingency theories for planning systems design. When dealing with schemes for long-range planning of corporations we need to indicate how a corporation plans, in contrast to all other corporations. There is a need for a disaggregate theory for a unique firm's planning, in contrast to the more aggregate planning theory of the firm which builds on an average, or normal, behavior.

A number of alternative conceptual schemes of planning systems may be plausible. We may want to start with one, characterized by means of a specific choice of planning structure and process. Then, we may explore what contingency design choices of variables seem relevant, given this conceptual scheme. We may analyze the contingency design issues for a number

of alternative conceptual planning systems schemes. By comparing the nature of contingencies between schemes we may be able to identify more or less general contingency design issues. This will help us evaluate to what extent it is necessary to have a given system model specifically in mind when doing research or implementation.

In order to be able to verify emperically the comparative theoretical contingency analysis just suggested, there seems to be a need for better measures for variables to be observed. For instance, we should be able to measure the effectiveness of alternative planning systems, in order to determine which contingency design is the most useful. Also, we should be able to describe a company's contingency setting by measuring a finite set of situational factors (i.e. independent variables). There will probably be a need to develop better surrogate measures for certain phenomena. Scaling problems will also have to be resolved. Finally, an analogous need for measurement skills exists when it comes to the design (i.e. dependent) variables.

Another major area of research relates to the interrelationship between formal planning systems and the other parts of a company's administrative systems, such as formal organization structure, control system, etc. For instance, traditionally we are accustomed to take the formal organizational structure as given and then to design the planning system to fit the organization. In the longer run, however, the planning system may have impact on the organizational structure. Thus, experimentation with modification of organization structures may become an important tool for more effective long-range planning. Thus far, little research has been done on the monitoring of the joint and interacting evolution of

planning systems and organization structure.[1]

Closely related to this is the question of organizational change. A major purpose of the formal planning system may be to facilitate organizational change. The question then is how to design a planning system to accomplish this. Theories of organizational development and models for planned change give insight here.[2]

Another aspect of keeping a balance between the elements of an administrative system will be to improve the planning for strategic expenditures, such as research, product development, advertising, etc., and to better integrate these plans with the overall plans of the firm in general.. According to the hierarchical model for strategic decisions and planning processes, the functional departments such as the research and development and the marketing department should be responsible for strategic decisions in these areas and for programs that coordinate the use of these expenditures, However, not only the amount but also the corporate wide "mix" of strategic expenditures will be important for the company as a whole. Hence, there is an element of "portfolio" planning in strategic expenditures, to be performed under the corporate leadership. Because the effective utilization of strategic expenditures are often dependent on the availability of specialized skills, the allocations will have to be further balanced in such a way

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[1]See Radosevich, R. H., "Strategic Implication of Organizational Design," paper given at the Strategic Management Conference, Graduate School of Business, Vanderbilt University, May 14-18, 1973.

[2]There have been many attempts to design a multi-stage model based on an organizational development approach to change. For a summary of these, see Kolb, D. A., and A. L. Frohman, "An Organization Development Approach to Consulting," Sloan Management Review, Fall, 1970.

that these bottleneck factors generally are not over/under utilized. Research is needed to improve the understanding of the nature of planing for strategic expenditures and its integration with other planning tasks.[1]

Still another related research area that seems prone to be handled is the question of linkage between planning and control. Too much reliance on planning relative to control may be just as detrimental as the opposite case in that both "future shock" and escapism may be dangers. Progress has been made in this area, but more work seems to be needed on behavioral effects from linking performance responsibility and incentives to planning.[2] Thus, another question will relate to how to devise incentive schemes for managers so that they will be motivated to take strategic decisions with long-time effects. Measurement schemes for measuring performance based on the success of strategic decision-making will have to be developed.[3] Related to this is the problem of developing better methods for measuring the degree of performance fullfillment for key variables. For instance, how do we measure performance relating to product and market development, the degree of societal acceptance, etc. [4] In general it seems to be relatively

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[1]See Vancil, Richard F., "Better Management of Corporate Developement", Harvard Business Review, 1972, and Balthasar H.U. and S. Gutzwiller, "Steady State Concept and Portfolio Management in Reasearch and Developement", paper given at the 45th ORSA/TIMS Joint National Meeting, Boston, April 22-24, 1974.

[2]See Shank, John, et. al.(Harvard Business Review), op. cit. and Lorange, P., and M.S. Scott Morton, "A Framework for Management Control Systems", Sloan Management Review, Fall 1974.

[3]See Salter, M. S., "Management Appraisal and Reward Systems," Journal of Business Policy, Vol. 1, No. 4.

[4]See Haselhoff, Fritz, "A New Paradigm for the Study of Organizational Goals," paper given at the Strategic Management Conference, Graduate School of Business, Vanderbilt University, May 14-18, 1973.

easier to measure strategic performance at the corporate level than at the divisional level and even more difficult at the departmental level, the reason being that traditional accounting-based measures will be less and less satisfactory as expressions for the quality of strategic decision-making for such responsibility centers. Finally, the information systems will need to incorporate better techniques for identification of key variables,[1] and the monitoring of these, particularly environmental variables.[2]

To make effective planning systems work will be most difficult in those corporations which have the most complicated situational settings. As examples of this it may be beneficial to study the implementation of planning systems for organizations with matrix structures. Companies with a matrix structure will have a more difficult planning task because of the higher information processing requirement. Also related is the development of planning systems for multinationals which have matrix elements as part of their organizational structure. How might political and economic risk be monitored in such planning systems?

"External" Issues

One important "external" planning research issue relates to ways to systematize the scanning of the business environment. How do we formalize a process to assess the environment on an ongoing basis? Which phenomena should be scanned? Who should do the scanning? How should the emerging information be made usefull as inputs for revision of

[1] Lorange, P., and M. S. Scott Morton, op. cit.

[2] Dill, William R., "Strategic Information as a Management Tool," paper given at the Strategic Management Conference, Graduate School of Business, Vanderbilt University, May 14-18, 1973.

plans? These and other questions cannot be answered unless further research is undertaken. However, given our model of the distinctively different strategic decision and planning processes within a decentralized firm, it seems reasonable that each decision-making unit should be largely responsible for their own scanning, reflecting and in accordance with their given planning tasks. Thus the key variables to be monitored will be different between coporate, divisional or functional units. Also, responsibility for the scanning tasks should be parcelled out in accordance with the planning tasks. Research is probably needed to improve environmental scanning within the conceptual formal planning model.

More attention should also be devoted to how to cope more effectively with social and political problems in planning. Taylor cites a number of cases such as General Electric (pricing), General Motors (road safety), ITT (politics in Chile), Renault (the revolution of May 1968) and BP (conservation of the tundra in Alaska) as evidence that major challenges can arise through government bodies or strong societal pressure challenges arise through government bodies or strong societal pressure groups.[1] Rhenman has done pioneering research on how to plan for such external challenges,[2] but more research may be needed.

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[1]Taylor, Bernhard, "Strategic Management," Long Range Planning, Sept. 1973.

[2]Rhenman, op. cit.

[3]See Rawls, J. R., and D. J. Rawls, "Toward Better Selection and Placement of Strategic Managers," paper given at the Strategic Management Conference, Graduate School of Business, Vanderbilt University, May 14-18, 1973.

A final issue is whether or not the "internal" and "external" formal planning systems should be integrated into one overall system, or whether we in fact have to do with two entirely different systems with different purposes. Research should look into this question. The answer will indicate whether "external" planning factors will have a major impact on the "internal" system or not.

Multiattributable objectives

A further research area deals with the process of trading off between objectives of various types, including non-monetary ones. This problem becomes particularly relevant when "external" planning factors are considered. Simon and several others have stated that organizational goals tend to develop as a resultant of the primarily implicit and informal tradeoffs between organizational subunits.[1] Yet with the advent of formal planning procedures ther often may be a need for explicit formulation of quantitative goals.[2] How, then, do we trade off between goals? Important research has been done on quantitative formulation and on the trade off of objectives within the area of multi-attribute theory.[3] An important research problem would be to look into this and other avenues for improving goal specification.

[1]Simon, Herbert A. "On the concept of Organizational Goals". Administrative Science Quarterly, June 1964.

2. Carter E.E. and K. Cohen, op.cit., and Cohen, K. and R. Cyert, op. cit.

3. Keeney, Ralph, "An Illustrative Procedure for Assessing Multiattributed Utility Functions", Sloan Management Review, Fall 1972, and do. "A Decision Analysis With Multiple Objectives: The Mexico City Airport"; Bell Journal of Economics and Management Science, Spring 1973.

This completes our survey of the state-of-the-art of long range planning systems for industrial corporations. We have stated the general nature of the planning problem, surveyed the theoretical and empirical literature and identified what seem to be a few major issues about the state-of-the-art of planning systems. Finally, a number of suggestions have been given as to where to go from here with research efforts. My attempt has been to be reasonably exhaustive. However, with the vast body of literature on the subject in existence, I can of course not guarantee that this survey is free from biases, given potential misinterpretations and neglectances. It seems clear, however, that the basis exists for many existing research projects with high usefullness potentialities in the years to come.